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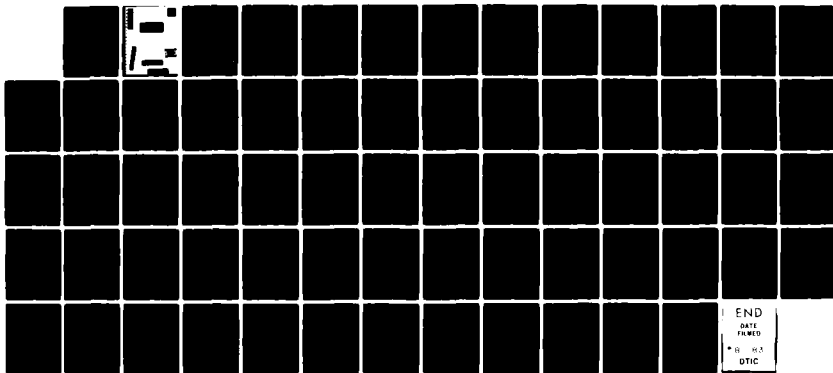
PROJECT UPGRADE EXTENDED STATISTICAL ANALYSIS(U)  
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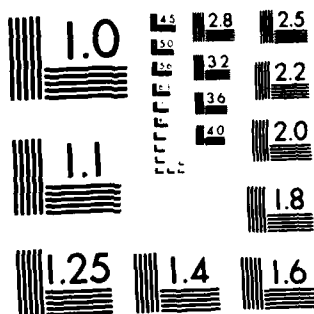
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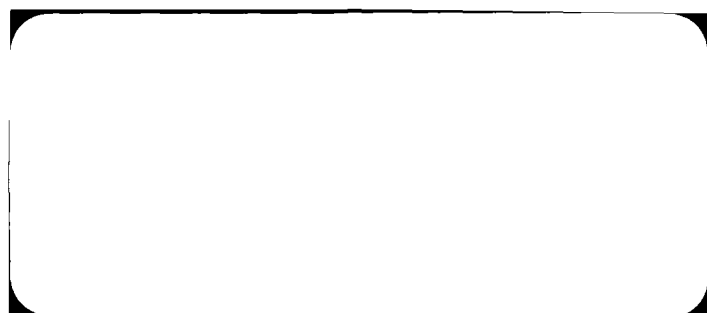
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## PROJECT UPGRADE EXTENDED STATISTICAL ANALYSIS

### FINAL REPORT

May 1983

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This study provided a statistical analysis of the Navy's Project UPGRADE, a program for administrative early discharge of first term enlistees. The study analyzed the effect of UPGRADE on the overall Navy early discharge profile for first-term enlistees, and identified enlistee characteristics and Navy-related factors which distinguished UPGRADE members from comparison groups.		

## EXECUTIVE SUMMARY

### BACKGROUND

Project UPGRADE was implemented from July to August, 1981, and from January to March, 1982. The program permitted unit commanding officers to administratively discharge individuals whose performance routinely migrated between unsatisfactory and marginal and whose proper supervision required a disproportionate amount of time, energy, and resources. UPGRADE was targeted at multiple Unauthorized Absence (UA) offenders and others who the commanding officer believed were an unwarranted burden to the command.

The authority to discharge members at the convenience of the government was not new; such authority already existed. Project UPGRADE offered an alternative and easier route to administer early discharge while the regular early discharge procedures were still in effect. The intent of the program was both to demonstrate that the Navy's leaders were serious about upgrading the fighting quality of the Navy and to increase the amount of time officers and enlisted leaders had available to spend with their productive personnel.

### STUDY OBJECTIVES

This study was commissioned to determine, through an extended statistical analysis:

- The effect of Project UPGRADE on the overall Navy discharge profile of first-term enlistees.
- Characteristics and factors that distinguish UPGRADE discharges from their Navy peers:
  - other first-term discharges ("Early Discharges")
  - first-term enlistees not discharged ("Non-Discharges")

## MAJOR RESULTS/CONCLUSIONS

The overall finding of the study is that UPGRADE accomplished what it was intended to do. That is, UPGRADE discharged marginal performers among first-term enlistees of the Navy. More specific findings are:

- UPGRADE resulted in a significant increase in first-term attrition for the periods in which it was in effect. In other words, little substitution of UPGRADE discharges for other early discharges occurred.
- UPGRADE subjects were marginal performers on the whole while non-UPGRADE Early Discharge cases represented more severe disciplinary problems.

The study identified several factors which distinguished UPGRADE cases from either Early Discharge or Non-Discharge cases, including:

- Performance Evaluation Marks: UPGRADE members received relatively poor performance evaluation marks according to enlistee microfiche records.
- Sea/Shore Duty Status: A much higher percent of UPGRADE cases were in sea duty status relative to either the Early Discharge or Non-Discharge groups.
- Disciplinary Status: Early Discharge, relative to UPGRADE, subjects tended to present more severe disciplinary problems.
- Non-Judicial Punishments (NJP): UPGRADE subjects had a higher incidence of NJPs compared to members of Early Discharge groups.
- High School Completion: The UPGRADE groups had the lowest regular high school completion rates compared to any other group in the study.
- Unauthorized Absence (UA) Incidence: UPGRADE 81 had a higher UA rate relative to Early Discharge, but UPGRADE 82 had a lower rate. This result pertained to UAs that lasted 24 hours or longer.
- Sociodemographic Characteristics: UPGRADE cases tended to be similar to Non-Discharge cases in terms of sex, marital status, and race. Conversely, early discharge cases tended to have higher proportions of females, married members, and whites.

An important issue for this study was whether UPGRADE subjects would have been discharged early regardless of the implementation of Project UPGRADE.

The fact that the above set of factors and characteristics clearly distinguished UPGRADE cases from the regular Early Discharge cases supports the conclusion that little, if any, substitution of UPGRADE for Early Discharge occurred. Furthermore, analysis of total monthly and annual early attrition data for first-term enlistees showed very significant increases in attrition for the periods in which UPGRADE was in effect. Jointly, these results imply that UPGRADE subjects, on the whole, would not have been discharged early without the UPGRADE program.

The "marginal performance" aspect of the UPGRADE groups was demonstrated by poor performance evaluation marks, a high rate of NJPs, and a high incidence of UAs. In fact, the performance and behavior were likely worse than "marginal" in many UPGRADE cases. Conversely, UPGRADE subjects did not commit as many major infractions on average as the Early Discharge subjects did.

The variable with the most statistical power to distinguish UPGRADE from the other study groups was sea/shore duty status. The UPGRADE directives reduced the administrative burden of processing early discharges. The high percent of UPGRADE subjects from sea duty could imply that normal processing of regular early discharges was a fairly routine task to many shore commands, but an overload task to many ships, so that the reduced administrative requirements of UPGRADE discharges has a relatively greater effect at the sea commands. Furthermore, the greater rigors, the greater visibility of each individual member to his commanding officer, and the greater criticality of each member to the unit's performance on sea duty relative to shore duty all may have contributed to the large percentage of UPGRADE subjects coming from sea duty.



The lack of completion of regular high school was a key factor which distinguished both UPGRADE and Early Discharge cases from Non-Discharge cases. The distinction, though, was more pronounced with respect to UPGRADE. Overall, the analysis again demonstrated that completion of regular high school is a good predictor of enlistee success in the Navy.

A final issue addressed by the study was whether or not the CNOs 1982 drug initiative had any interaction effects with UPGRADE 82. The analysis results showed that the drug initiative did impact on UPGRADE because the drug-related incidence rate was higher for UPGRADE 82 relative to both UPGRADE 81 and the regular Early Discharge groups implying that drug offenders were incorrectly separated under UPGRADE. That finding would indicate that such similar programs should be separated in time if substitution/interaction effects are of concern.

In summary, UPGRADE appears to be an effective mechanism for discharging marginal performers from the Navy. UPGRADE is not a substitute for the regular early discharge program, but appears to be an effective complement to it when the recruiting environment permits such measures to be taken. UPGRADE contributed to the improvement of the quality of the Navy's first term enlisted personnel at least to the extent of removing individuals with poor performance marks, thereby likely resulting in more productive use of the officers' and enlisted leaders' time. Based on the study findings, project UPGRADE should be considered as a viable personnel program for effecting both quality and quantity of the Navy's first-term enlisted population.

## ACKNOWLEDGEMENTS

CDR George Anastasi and LCDR Kathleen O'Brien of OP-135 were the technical monitors of the study. Their significant advice and direction for the study is gratefully acknowledged. Mr. Kenneth Gay of NMPC-16 performed the data extraction from Navy computerized data files and the creation of new files suitable for the study's analysis. His expert and efficient processing of the necessary data is very much appreciated.

In addition, Ms. Rosemary Shad, Ms. Phyllis Brown, and Ms. Supalak K. Methakal at ISI provided technical support in the preparation of analytical data available from microfiche and other sources.

## TABLE OF CONTENTS

<u>SECTION</u>	<u>PAGE</u>
EXECUTIVE SUMMARY .....	i
ACKNOWLEDGEMENTS .....	v
I. BACKGROUND .....	I-1
A. Project UPGRADE FY 81 and FY 82 .....	I-1
B. Objectives and Approach of the Study .....	I-2
II. METHODOLOGY .....	II-1
III. STATISTICAL RESULTS .....	III-1
A. Analysis of Monthly and Annual Attrition Trends .....	III-1
B. Analysis of Microdata .....	III-5
C. Discriminant Analysis .....	III-23
D. Analysis of Microfilm Record Data .....	III-30
IV. CONCLUDING REMARKS .....	IV-1

# LIST OF TABLES

<u>TABLE</u>		<u>PAGE</u>
II-1	Population Sizes of Study Groups .....	II- 2
III-1	Percent Distribution of Enlistees By Selected Variables .....	III- 7
III-2	Mean Values of Selected Variables .....	III- 9
III-3	Percent Distribution of Enlistees By Disciplinary Actions .....	III-14
III-4	Percent Distribution of Enlistees By Race .....	III-16
III-5	Percent Distribution of Enlistees By Training Status .....	III-18
III-6	Percent Distribution of Enlistees By Occupational Area .....	III-19
III-7	Percent Distribution of Enlistees By Mental Group .....	III-20
III-8	Percent Distribution of Enlistees By Recruiting Area .....	III-21
III-9	Percent Distribution of Enlistees By Term of Enlistment .....	III-22
III-10	Discriminant Analysis of UPGRADE Versus Early Discharge (ED) .....	III-24
III-10B	Definition of Variables Entered in the Discriminant Analysis .....	III-25
III-11	Discriminant Analysis of UPGRADE Versus Non-Discharge (ND) ..	III-28
III-12	Discriminant Analysis of Early Discharge I Versus Non- Discharge 81 .....	III-29
III-13	Microfiche Record Sample Sizes of Study Groups .....	III-32
III-14	Verification of Sample File Representativeness Against Popula- tion Groups: Comparison of Percent Distributions of Variables .....	III-34
III-15	Verification of Sample File Representativeness Against Popula- tion Groups: Comparison of Mean Values of Variables .....	III-35
III-16	Percent Distribution of Enlistees By Selected Variables Based on Microfiche Data.....	III-36
III-17	Mean Values of Selected Variables Based on Microfiche Data ..	III-37
III-18	Discriminant Analysis of UPGRADE Versus Early Discharge (ED) Based on Microfiche Data ...	III-38

# LIST OF FIGURES

<u>FIGURE</u>		<u>PAGE</u>
II-1	Time Frames of Study Groups .....	II-3
III-1	Enlisted First Term Attrition Trends: January 1981 to June 1982 .....	III-2
III-2	Total Monthly First Term Attrition from July to June, 1979 to 1982 .....	III-4
III-3	Annual First Term Percent Attrition, Fiscal Year 1977 to 1982 .....	III-6

## I. BACKGROUND

### A. Project UPGRADE FY81 and FY82

Project UPGRADE was implemented first in FY 1981 to permit unit commanding officers to administratively discharge individuals whose performance routinely migrated between unsatisfactory and marginal and whose proper supervision required a disproportionate amount of time, energy, and resources. UPGRADE was targeted at multiple UA offenders and others who the commanding officer believed were an unwarranted burden to the command.

The authority to discharge members at the convenience of the government, though, was not new; such authority already existed. Project UPGRADE offered an alternative and easier route to administer early discharges while the regular early discharge procedures were still in effect. The intent of the program was to demonstrate that the Navy's leaders were serious about upgrading the fighting quality of the Navy and to increase the amount of time officers and enlisted leaders had available to spend with their productive people.

The eligibility criteria for UPGRADE discharges were:

1. Paygrade E-3 or below.
2. Serving in first enlistment.
3. Completed recruit training.
4. Served onboard (then) current command at least 60 days.
5. Considered marginal performer because of one or more of the following:
  - a. Failure to maintain required proficiency in rate.
  - b. Performance which was non-contributory to unit readiness and mission accomplishment as specifically evidenced by below-average performance rating or demonstrated incapacity to meet effectiveness standards.

- c. Created an administrative burden to the command due to military or disciplinary infractions and could not, without disproportionate effort, be turned into a productive member of the Navy. In particular, any member who had been UA four or more times should have been processed for an UPGRADE discharge unless a solid basis for retention existed in the opinion of the CO.

Discharge quotas were not set, but an eight-week window (2JUL81-31AUG81) was established for discharge actions under UPGRADE authorization.

Approximately 3900 members were discharged under the FY81 UPGRADE effort.

Although Project UPGRADE had been originally conceived and implemented for one-time execution, positive feedback from Navy leaders led to a determination by the CNO to implement it again in FY 1982. This time, the guidance was somewhat modified (e.g., three or more instances of UA, rather than four or more, were cited as the ... "should be processed..." criteria) and the action window was 16JAN-15MAR. The number of personnel discharged under the FY82 UPGRADE authorization reached almost 5000.

#### B. Objectives and Approach of the Study

The objectives of the study were to:

- Determine the effect of UPGRADE on the overall Navy early discharge profile for first-term enlistees.
- Determine characteristics and factors which distinguished UPGRADE members from:
  - Other early discharges.
  - Enlistees not discharged early from the Navy.

The major components of the research consisted of:

- Analysis of aggregate monthly/annual first-term attrition data.
- Analysis of microdata representing six study comparison groups, including UPGRADE, other early discharges, and non-discharge cases.

- Descriptive analysis, including the calculation of percent distributions and mean values.
- Multivariate technique of discriminant analysis which distinguished UPGRADE cases from comparison group cases in terms of several Navy-related factors and member characteristics.

The next section discusses, in greater detail, the specific methodologies used for the study's analysis of UPGRADE results.



## II. METHODOLOGY

Three major categories of data were analyzed in this study:

- Aggregate monthly and annual data on Navy first-term attrition.
- Individual (micro) enlistee data derived from computerized data files on UPGRADE and Early Discharge subjects.
- Individual enlistee data derived from samples of enlistee microfiche records.

The analysis of monthly and annual data was performed first to present an overview of Navy attrition before proceeding to the more detailed analysis of the microdata. The analysis of the aggregate data, in particular, investigated the effect of Project UPGRADE in the trend of early discharge of first-term enlistees.

For the analysis of microdata, UPGRADE FY 81 and 82 population groups were analytically compared against two non-UPGRADE Early Discharge groups and two Non-Discharge groups. The population sizes of these target and comparison groups are presented in Table II-1, while the time frames of the groups are portrayed in Figure II-1. The Early Discharge groups were:

- Early Discharge I: All early discharges in the reporting quarter preceeding UPGRADE FY 81, excluding those who had served six months or less on active duty.
- Early Discharge II: All early discharges during the same reporting quarter in which UPGRADE FY 81 occurred, excluding those who had served six months or less on active duty.

In the selection of the comparison groups, we considered the possibility of substitution effects between UPGRADE discharges and Early Discharges occurring during the same two-month period as UPGRADE. In other words, the issue was

TABLE II-1  
POPULATION SIZES OF STUDY GROUPS

<u>GROUP</u>	<u>POPULATION SIZE</u>
UPGRADE 81	3814 <u>1/</u>
UPGRADE 82	4699 <u>1/</u>
Early Discharge I	2759
Early Discharge II	2753
Non-Discharge 81	4764
Non-Discharge 80	2787

---

1/ The total numbers of individuals discharged were actually 3,929 and 4,958 under Project UPGRADE 81 and 82, respectively. The study group sizes are a little less due to the exclusion of records which indicated length of active duty as being six months or less.

Non-Discharge  
80

----->

|-----|-----|-----|-----|  
1 Apr 1 May 1 Jun 1 Jul  
80 80 80 80

Non-Discharge 81  
Early Discharge II

----->

Early Discharge I  
UPGRADE 81

----->

UPGRADE 82

----->

|-----|-----|-----|-----|-----|-----|-----|-----|  
1 Apr 1 May 1 Jun 1 Jul 1 Aug 1 Sep 1 Oct 1 Nov 1 Dec 1 Jan 1 Feb 1 Mar  
81 81 81 81 81 81 81 81 81 81 81 81 82 82

FIGURE II-1  
Time Frames of Study Groups

whether or not UPGRADE subjects would have been discharged early regardless of Project UPGRADE being in effect or not. Therefore, Early Discharge I subjects were selected from the reporting quarter prior to the implementation of the first Project UPGRADE in order to avoid interaction or substitution effects in this comparison group. However, Early Discharge II represented the same time frame as UPGRADE 81 in order to determine if such a selection would show any difference in the comparative results. If comparisons between UPGRADE and Early Discharge I, on the one hand, and between UPGRADE and Early Discharge II, on the other hand, were to yield similar results, then the hypothesis would be supported that UPGRADE and Early Discharge operated independently of each other during the time that UPGRADE was in effect. The results in Section III of the report show this to be the case.

The Non-Discharge groups were:

- Non-Discharge 81: A sample of non-discharged first-term (E-1 to E-3) enlistees in the quarter preceeding UPGRADE 81, excluding members who had served only six months or less on active duty.
- Non-Discharge 80: A sample of non-discharged first-term (E-1 to E-3) enlistees for the April to June quarter of 1980, excluding members who had served only six months or less on active duty.

Comparison of both UPGRADE groups against Non-Discharge as well as Early Discharge groups provided a basis for obtaining additional insights into the distinguishing characteristics of UPGRADE subjects. The Non-Discharge subjects were selected on the basis that they had not been discharged early subsequent to the reporting period which they represented. The selection of one Non-Discharge group as far back as early FY 1980 enhanced the likelihood that the selected members were not discharged early at some later date. The "control" aspect of the Non-Discharge group, thereby, was enhanced with this requirement.

Approximately 5,000 members were sampled initially for each of the two Non-Discharge groups. Preliminary analyses were conducted on these sample sizes. The samples were reduced in size when members who had served six months or less were eliminated. These members were excluded to correspond to UPGRADE criteria which required that an enlistee serve at least six months. In spite of the sample reduction, the samples corresponded similarly to the characteristics of the general first-term population, including race, sex, age, mental group, and training level.

Both descriptive and multivariate techniques were used to analyze enlistee characteristics and Navy-related factors which distinguished enlistees from each other among the comparison groups. Several relevant variables were extracted from the Navy's Survival Tracking File (STF), which is an historical file of enlistees derived from the larger Enlistee Master Record (EMR) file. These variables included:

- Sea vs. shore duty
- Length of service
- End-of-quarter disciplinary record
- High school diploma status
- Marital status and other socioeconomic characteristics
- A-School/General Detail status
- Armed Forces Qualification Test (AFQT) scores

Simple statistical instruments were used to examine bivariate relationships between UPGRADE membership vs non-membership and selected variables. For example, percent distributions of sea/shore duty status and mean values of AFQT scores were calculated by comparison groups in order to discern pertinent

differences among the study groups. The multivariate technique of discriminant analysis was used to identify a set of characteristics/factors which simultaneously separated comparison groups from each other as distinctly as possible. The discriminant analysis technique also reported the relative statistical contribution of each variable to differentiating one group from another.

Additional analyses were performed on samples of individual enlistee microfiche records. These samples were derived from the UPGRADE and selected Early Discharge population groups. The analyses focused on variables not available from the computerized data files, but relevant to the individual's performance and behavior record. These variables included:

- Performance evaluation marks
- Drug-related incidences
- Non-judicial punishment
- UAs less than 24 hours

The analyses performed on the sample microfiche records paralleled the analyses of the computerized data files.

### III. STATISTICAL RESULTS

The preliminary statistical results of the study are presented in four sections below: Analysis of Monthly and Annual Attrition Trends; Analysis of Microdata; Discriminant Analysis; and Analysis of Microfiche Record Data. The analysis of trend data examined enlisted monthly and annual attrition totals in order to render initial insight into UPGRADE's impact on total attrition. The analysis of microdata, i.e., individual enlistee records, examined bivariate relationships in UPGRADE versus Early Discharge groups. The discriminant analysis extended the bivariate microdata analyses with discriminant or multiple regression analyses on the same data base. The analysis of microfiche data combined both bivariate and multivariate techniques to analyze additional important variables.

#### A. Analysis of Monthly and Annual Attrition Trends

Figure III-1 presents the monthly totals of enlisted first term attrition from January 1981 to June 1982 by major reason for discharge. There are numerous official reasons for early discharge from the Navy, but for analytical purposes only three major categories were specified:

- Unsuitable
- Fraud/error
- Disabled

The broad category of "unsuitable" includes the following categories (which are themselves aggregates of more detailed reasons):

- Personality disorder
- Alcohol/drug involvement

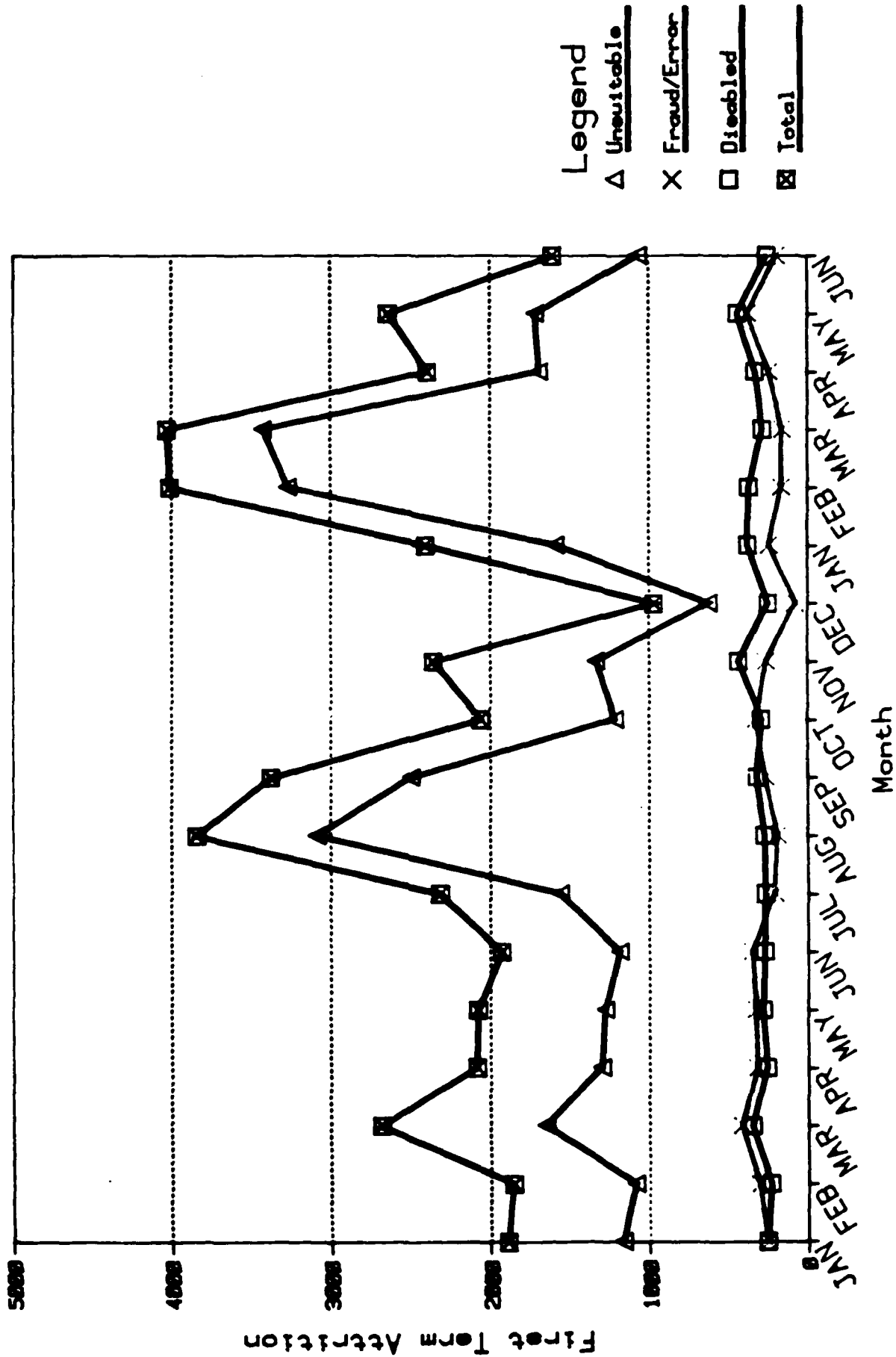


FIGURE III-1  
Enlisted First Term Attrition Trends January 1981 to June 1982



- Court involvement
- Burden to command
- Apathy
- Good of the service

The category of "fraud/error" comprises fraudulent enlistment and erroneous enlistment. "Disabled" comprises disability discharges, pregnancy, and other medical discharges. Other categories (e.g., death, promotion to officer status) were not included because their numbers were relatively small and/or they did not readily fit into the three broad categories specified.

The overall total attrition trend, displayed in Figure III-1, shows two large peaks occurring during the two UPGRADE time periods. The larger category of "unsuitable" closely follows the total trend while the smaller categories of "fraud/error" and "disabled" present flat, stable trends. The UPGRADE discharges were generally under the "unsuitable" category; within that category most UPGRADE discharges fell under "burden to command."

Both UPGRADE 81 and UPGRADE 82 occurred within twelve (12) months of each other during calendar years 1981 and 1982. The total monthly attrition trend for this 12-month period was compared against the respective 12-month period in each of two previous years to obtain further insight on UPGRADE's impact on total attrition. In Figure III-2 the two UPGRADE-period peaks stand out in comparisons against the previous years as well. In all cases the total attrition trend takes a dip for the month of December, apparently related to the holiday period. While the trend related to the UPGRADE year took a sharper December dip compared to previous years, this trend also showed an upturn for the immediately prior month, November. Record-keeping procedures for early discharge may have had some impact on monthly fluctuations.

TOTAL ATTRITION

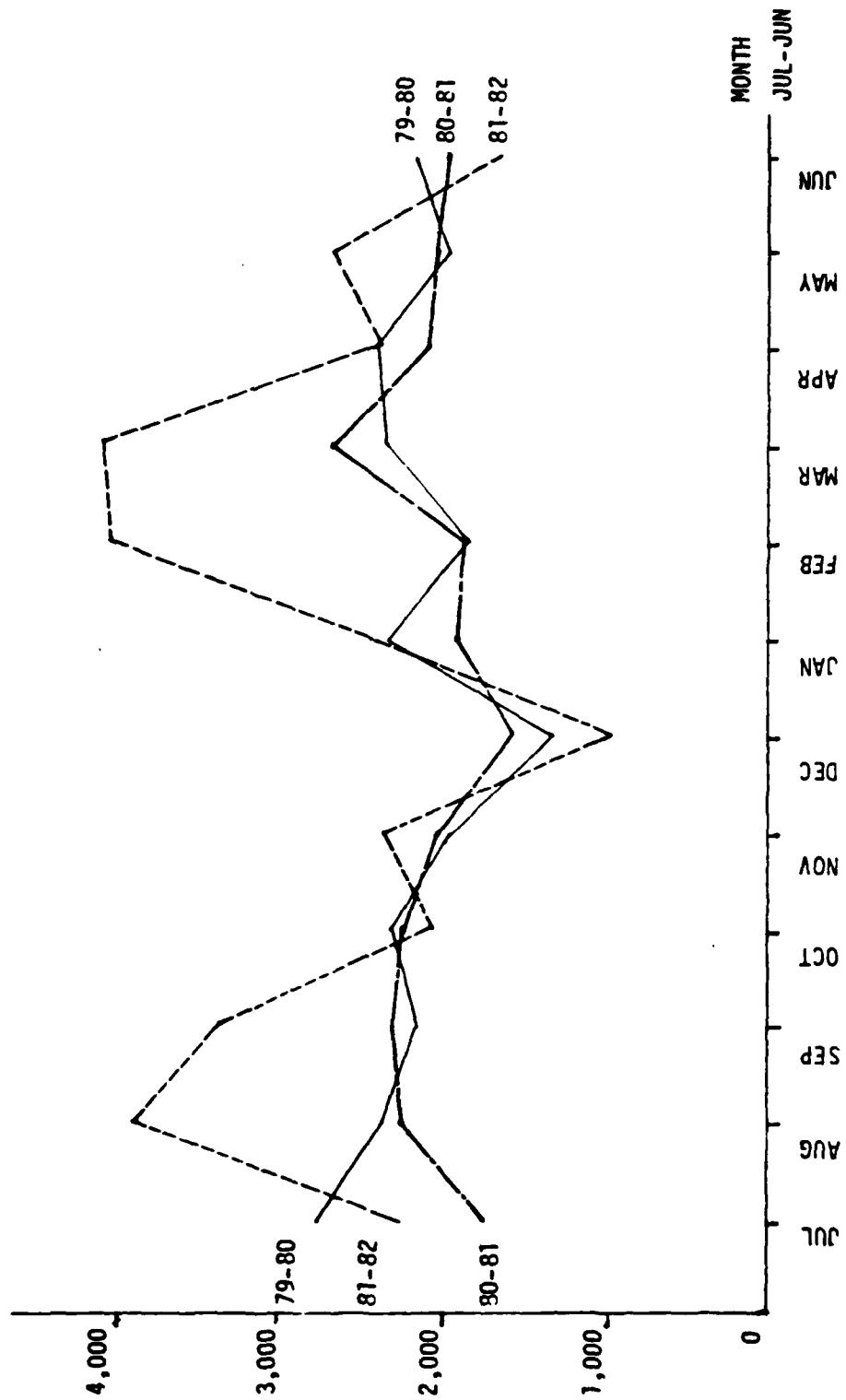


FIGURE III-2  
Total Monthly First Term Attrition From July to June, 1979 to 1982

Figure III-3 presents an annual perspective on total attrition trends for Fiscal Years 1977 to 1982. The solid line in Figure III-3 shows the actual total attrition while the broken line segment reflects attrition without the UPGRADE totals. Without the UPGRADE numbers in the total, the overall attrition trend showed a smooth leveling off in the most recent years. With UPGRADE, though, the trend showed a decided upturn and higher level of attrition.

The basic conclusion to be drawn from these graphic analyses is that UPGRADE resulted in total first term enlisted attrition greater than what would have occurred in its absence. The more detailed analyses described in the following sections further substantiate this conclusion and identify specific distinctions between UPGRADE enlistees and Early Discharges.

#### B. Analysis of Microdata

UPGRADE resulted in a significant increase in first term attrition for the periods in which it was in effect as indicated in the previous section. Descriptive and discriminant analyses in this and the subsequent sections further supported the hypothesis that UPGRADE and Early Discharge operated independently of each other. These analyses also identified Navy-related factors and enlistee characteristics which distinguished UPGRADE subjects from Early Discharge and Non-Discharge subjects. For the descriptive analysis, Tables III-1 and III-2 present percent distributions and mean values of selected variables, respectively, by study group.

In summary, factors or characteristics which distinguished UPGRADE from Early Discharge included:

ENLISTED FIRST TERM ATTRITION  
AS % OF FIRST TERM POPULATION

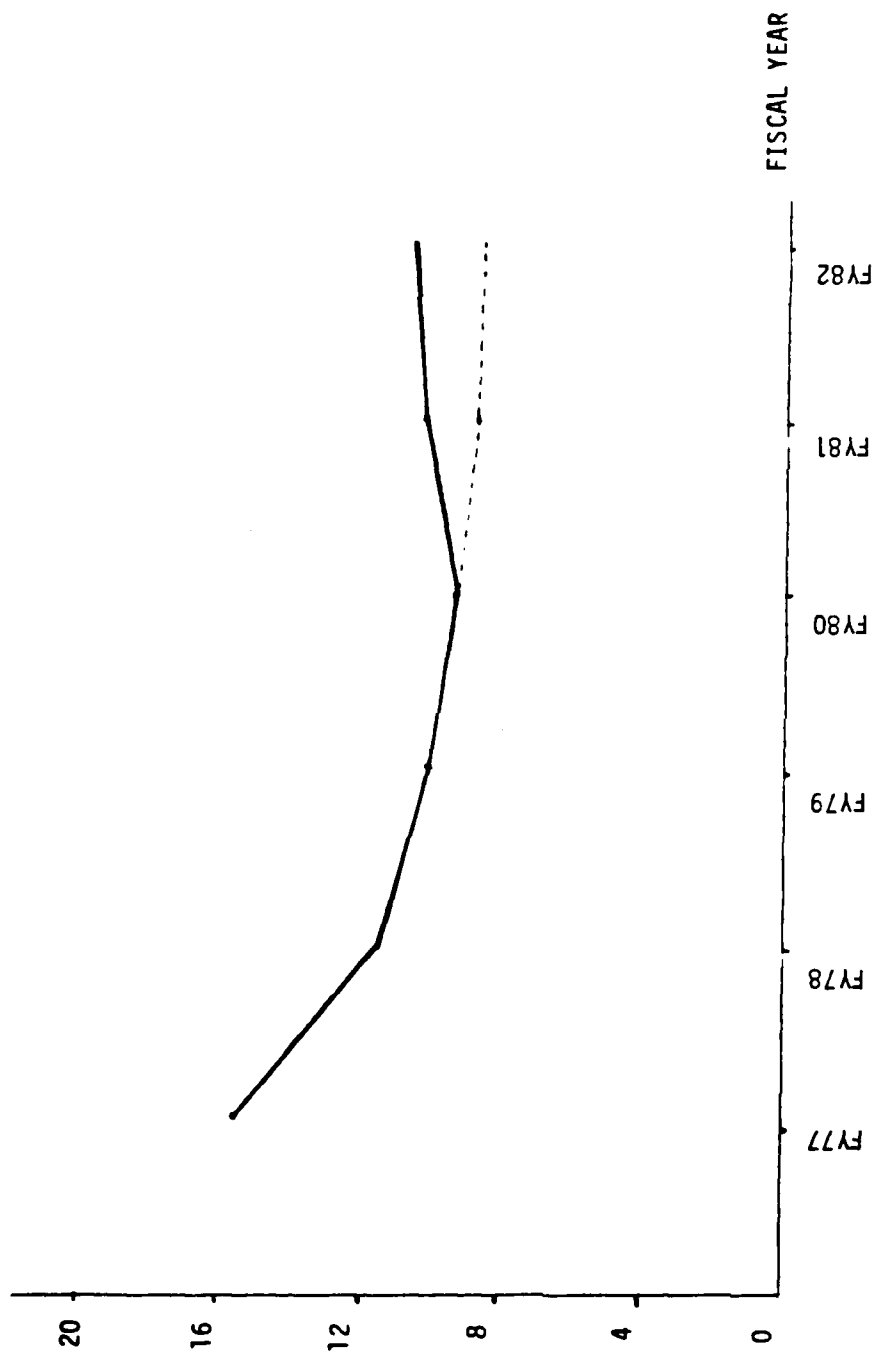


FIGURE III-3  
Annual Enlisted First Term Percent Attrition Fiscal Year 1977 to 1982 <sup>1/</sup>

Legend:

— Actual Trend  
---- Trend Without UPGRADE

<sup>1/</sup> Actual data for FY82 is available through June only, and therefore extrapolation through the full year is used.

TABLE III-1

Percent Distribution of Enlistees by Selected Variables

	UPGRADE 81	UPGRADE 82	Early Dis- charge I	Early Dis- charge II	Non-Dis- charge 81	Non-Dis- charge 80
Active Duty						
- 6 to 18 mos.	34.8%	38.1%	41.0%	43.5%	34.4%	66.5%
- 19 to 30 mos.	38.9	38.1	31.7	30.9	30.2	16.8
- More than 30 mos.	26.3	23.8	27.4	25.6	35.5	16.7
Pay Grade						
- E1	32.2	25.2	35.0	30.7	29.4	19.6
- E2	39.6	40.1	35.0	34.4	24.3	15.3
- E3 (or higher)	28.3	34.7	30.0	35.0	46.3	65.2
Sea Duty						
- Sea	78.8	80.2	39.3	37.4	45.5	50.8
- Shore	21.2	19.8	60.7	62.6	54.5	49.2
Disciplinary Actions						
- None	94.6	94.8	75.1	79.3	95.1	93.7
- One or more	5.4	5.2	24.9	20.7	4.9	6.3
UA Incidence						
- None	58.5	76.1	65.9	69.3	89.7	87.5
- One or more	41.5	23.9	34.1	30.7	10.3	12.5
UA Type						
- Liberty	60.3	56.4	51.4	52.0	55.2	52.4
- Leave	4.0	4.5	3.9	5.0	8.3	6.3
- Duty	35.6	39.1	44.7	43.0	36.5	41.3
High School Diploma						
- No Diploma	35.6	31.7	28.3	23.7	16.0	17.1
- GED	12.7	14.2	14.1	14.1	8.1	8.7
- HS Diploma	51.7	54.1	57.6	62.3	76.0	74.2

TABLE III-1  
Percent Distribution of Enlistees by Selected Variables (Cont'd)

	UPGRADE 81	UPGRADE 82	Early Dis- charge I	Early Dis- charge II	Non-Dis- charge 81	Non-Dis- charge 80
General Detail Status						
- Non General Detail	66.8	67.4	66.3	67.6	70.6	69.4
- General Detail	33.2	32.6	33.7	32.4	29.4	30.6
Rating						
- No Rating	54.9	50.9	56.1	54.0	51.3	51.3
- Have rating	45.1	49.1	43.9	46.0	48.7	48.7
Sex						
- Male	95.6	97.0	85.2	81.9	89.2	90.9
- Female	4.4	3.0	14.8	18.1	10.8	9.1
Race						
- White	78.7	80.5	84.8	83.5	80.3	79.1
- Other	21.3	19.5	15.2	16.5	19.7	20.9
Marital						
- Not Married	83.5	85.7	78.1	78.9	85.4	84.6
- Married	14.5	14.3	21.9	21.1	14.6	15.4

TABLE III-2

## Mean Values of Selected Variables

	<u>UPGRADE 81</u>	<u>UPGRADE 82</u>	<u>Early Dis- charge I</u>	<u>Early Dis- charge II</u>	<u>Non-Dis- charge 81</u>	<u>Non-Dis- charge 80</u>
Time Remaining on Contract (months)	21.9	23.0	26.1	26.7	22.9	36.6
Active Duty Time (months)	24.1	23.5	23.6	22.9	26.4	17.0
Active Time Per Grade (months)	14.1	12.4	14.6	13.9	13.2	7.6
Age (years)	21.2	21.2	21.7	21.6	21.9	20.9
Age At Time of Entry	19.2	19.3	19.8	19.7	19.7	19.4
UA's Per Member	1.34	0.59	1.18	1.02	0.27	0.36
UA Days Per Member	10.90	4.73	9.85	8.75	2.09	2.91
Disciplinary Actions Per Member	.089	.079	.828	.705	.147	.209
AFQT Score	56.6	56.5	58.8	60.0	58.3	57.2
Numeric Screen	80.3	81.0	81.6	82.6	83.2	81.4
Years of Education	11.4	11.4	11.5	11.6	11.8	11.8
No. of Dependents	.266	.252	.668	.692	.316	.305

- Timing of Discharge: UPGRADE subjects were discharged, on average, later during their first-term enlistment period. This result persisted after accounting for the fact that UPGRADE was limited to enlistees who had completed recruit training.
- Sea/Shore Duty Status: A much higher percent of UPGRADE subjects was on sea duty thirty (30) days prior to date of separation compared to either Early Discharge group or the general first term enlisted population.
- Disciplinary Status: The UPGRADE subject tended, on average, to present a less severe discipline problem than the Early Discharge subject. In fact, the UPGRADE population had about the same record as the Non-Discharge groups in terms of the severe discipline problem. However, as the microfiche record analysis shows later, UPGRADE subjects fared much worse in terms of non-judicial punishments and work performance.
- High School Completion: A significantly lower percent of UPGRADE subjects had not completed a regular high school diploma program compared to Early Discharge subjects.
- UA Incidence: UPGRADE 81 had a higher UA rate relative to Early Discharge, but UPGRADE 82 had a lower rate.
- Sociodemographic Characteristics: The UPGRADE population tended to be more similar to the Non-Discharge groups in terms of these characteristics. In general, UPGRADE groups tended to have, relative to Early Discharge:
  - Lower percent of female subjects
  - Higher percent of non-white subjects
  - Lower percent of married subjects
  - Fewer dependents per enlistee.

Each of these results is discussed in greater detail below.

Compared to Early Discharge, UPGRADE subjects were discharged, on average, later during their first-term enlistment period. UPGRADE individuals had about 22 or 23 months time remaining on contract while Early Discharge subjects had about 26 or 27 months. In order for enlistees to be subject to an UPGRADE discharge they must have completed their recruit training. Therefore,



the analysis excluded Early Discharge subjects who had not completed recruit training to enhance the validity of analytical comparisons. Approximately one-third of the Early Discharge subjects were excluded because of this criterion.

The variable which most clearly distinguished UPGRADE subjects from Early Discharge subjects was sea duty versus shore duty status. Since all sea duty members to be discharged are transferred to a shore duty station shortly before separation, duty station status for purposes of this study was determined thirty (30) days prior to date of discharge. Approximately 79 or 80 percent of UPGRADE subjects were discharged while on sea duty while less than 40 percent of Early Discharge subjects were on sea duty when discharged. Similarly, only about 50 percent or less of Non-Discharge subjects were on sea duty. Generally speaking, the percent of UPGRADE subjects who were on sea duty at time of discharge was substantially higher than the percent of the entire Navy first term population on sea duty.

The UPGRADE directives eased the administrative burden of processing early discharges but only for those executed as UPGRADE discharges. UPGRADE did not, however, guarantee any relief from the vacant billets that would result from discharges under the program. The normal (i.e., non-UPGRADE) processing of early discharges is a routine task to most shore commands, while it usually represents an overload task to many, if not most ships. The significantly higher percentage of UPGRADE subjects coming from sea duty, then, may reflect a "threshold effect" in the sea duty commands. The benefits of removing the marginal performer out-weighed the costs (administrative and billet vacancy) to the unit under UPGRADE, while the situation was reversed under the normal

Early Discharge program. This hypothesis, which cannot be tested directly with data available for this study, would presume that such a "cost/benefit" determination is made, explicitly or implicitly, in the sea duty commands in cases of marginal performance.

An alternative, or possibly supplementary, hypothesis for the "sea duty" result is that the UPGRADE program may have affected the attitudes and perceptions of commanding officers of afloat units. Prior to UPGRADE, commanding officers afloat operated in an environment where members discharged early from their ships would not be replaced readily, and where emphasis had been placed on retention. Project UPGRADE, with its emphasis on quality relative to quantity, may have placed a different perception on this situation. Still another possible cause for the "sea duty" result relates to the shipboard environment itself. The rigors of sea duty, the greater visibility of each individual member on sea duty to his commanding officer, and the greater criticality of each member to the unit's performance on sea duty relative to shore duty all may have contributed to the large percentage of UPGRADE subjects coming from sea duty.

Another distinction which separated UPGRADE subjects from Early Discharge subjects was the disciplinary records of those subjects. The intent of UPGRADE was to discharge first-term enlistees where performance was marginal or worse. No doubt, the regular Early Discharge program has also relieved the Navy of marginal or worse performers. However, the Early Discharge program has had the objective of discharging members found unsuitable for a broader range of reasons. UPGRADE was targeted more specifically on the marginal performer.

In particular, the Early Discharge subject tended, on average, to be more of a severe disciplinary problem than the UPGRADE subject, as reflected in official end-of-quarter records. Only about five percent of the UPGRADE subjects were in disciplinary status one or more times in their end-of-quarter records, compared to about 20 and 25 percent for the Early Discharge I and II groups, respectively. The breakdown of enlistees, by number of disciplinary actions, is presented in Table III-3. The implication, that the UPGRADE subject was less a disciplinary problem than was the Early Discharge subject, is strengthened by noting that the disciplinary records of the UPGRADE group spanned, on average, longer periods of active duty service than did the Early Discharge records.

One of the specific targets of the UPGRADE program was the multiple UA offender. The first Project UPGRADE group had an average of 1.32 UAs per member, compared to an average of 1.1 UAs per member in the two Early Discharge groups; however, the second Project UPGRADE group had only about .6 UAs per discharge. Only about six months elapsed between the first and second UPGRADE programs. Apparently, the first UPGRADE had "weeded out" many of the persistent UA offenders or discouraged would-be offenders. These results, however, did not include periods of UA of less than 24 hours. In order to investigate the possible incidence of numerous short UA periods (less than 24 hours) as an UPGRADE group discriminator, data not available in the STF or EMR files were sampled from enlisted microfiche files and separately analyzed. The results of that analysis are reported in Section D.

One important characteristic of enlistees which helps to identify "high risk" candidates for UPGRADE discharge is lack of high school completion. In particular, only about 53 percent of UPGRADE subjects had a high school

TABLE III-3  
Percent Distribution of Enlistees by Disciplinary Actions

No. of Disciplinary Actions	UPGRADE 81	UPGRADE 82	Early Discharge I	Early Discharge II	Non-Discharge 81	Non-Discharge 80
0	94.6%	94.8%	75.1%	79.3%	95.1%	93.7%
1	3.3	3.4	5.7	4.5	1.7	1.5
2	1.2	1.3	6.6	3.9	0.7	1.3
3	0.5	0.4	2.9	2.7	0.5	0.8
4	0.2	0.1	1.3	1.1	0.4	0.9
5	0.1	0	1.4	1.4	0.6	0.5
6	0.1	0	2.1	1.5	0.3	0.6
7	0	0	1.6	2.0	0.3	0.2
8	0	0	1.4	1.0	0.1	0.2
9 or more	0	0	1.8	2.6	0.2	0.2

diploma (excluding Graduate Equivalence Degree (GED)<sup>1</sup>) compared to about 60 percent for Early Discharge subjects and 75 percent for the Non-Discharge members. In spite of the relative lack of education, slightly more UPGRADE subjects had a specific occupational rating relative to Early Discharge subjects.

Sociodemographic characteristics of enlistees also distinguished the comparison groups from each other although the distinctions were generally less pronounced than those produced by the other variables discussed above. The distinguishing sociodemographic characteristics included:

- Sex: The percent of males in the UPGRADE groups was about 96 or 97 percent compared to 82 and 85 percent for the Early Discharge groups. A good part of this difference, though, can be attributed to the result that a much higher percent of UPGRADE subjects came from the sea duty environment.
- Race: The percent non-white for UPGRADE tended to run a little higher than for Early Discharge but the discriminant analysis results presented in the next section indicated that this difference was weak when effects of other variables were considered. Among non-whites, blacks appeared to have a relatively higher representation in the UPGRADE population. (See Table III-4).
- Marital Status: The Early Discharge group had a higher percent of married members relative to the UPGRADE group and a significantly higher number of dependents per enlistee. The average number of dependents (including spouse) per Early Discharge enlistee was one-half dependent or more while it was only one one-fourth dependent per UPGRADE enlistee. Having dependents could contribute, conceivably, to an individual's stability. However, having dependents at a very early age (i.e., the age of first-term enlistees) may have the opposite effect.
- Age: There was virtually no difference in average ages between the UPGRADE and Early Discharge groups. When length of service was taken into account, Early Discharge enlistees tended to be a little older.

In general, UPGRADE enlistees tended to be similar to the general first term enlisted population in terms of sociodemographic characteristics.

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<sup>1</sup>The GED Program is a voluntary program which tests non-high school graduates and grants them "equivalency" status in lieu of the high school diploma if they pass a specific knowledge and skills proficiency level.

TABLE III-4

Percent Distribution of Enlistees by Race

	<u>UPGRADE 81</u>	<u>UPGRADE 82</u>	<u>Early Dis- charge I</u>	<u>Early Dis- charge II</u>	<u>Non-Dis- charge 81</u>	<u>Non-Dis- charge 80</u>
White	77.3%	78.7%	83.0%	81.9%	78.3%	77.0%
Black	18.2	16.6	12.5	12.7	15.0	16.7
American Indian	0.7	0.8	0.9	0.9	0.6	0.6
Asian Pacific	0.0	0.0	0.0	0.1	0.1	0.0
Filipino	0.4	0.3	0.3	0.6	1.3	1.3
Hispanic	2.9	3.2	2.8	3.1	3.7	3.7
Other	0.5	0.4	0.5	0.7	0.9	0.7
Total	100	100	100	100	100	100

However, as reported previously, they fell markedly short in terms of education level, relative to the general first term population. The key factors, then, which separated UPGRADE subjects from both Early Discharge subjects and the first term population were sea/shore duty status and high school completion.

Several other variables were investigated in the UPGRADE analysis, but the results in terms of difference among the comparison groups tended to be less pronounced or non-existent compared to the variables discussed above (See Tables III-5 to III-9). These variables were:

- Training status of enlistees
- Distribution of enlistees by occupational area
- Mental group categories and AFQT scores
- Recruiting area where the enlistee's home was located
- Term of enlistment

The results for each of these variables are summarized or highlighted as follows:

- Training Status: The percent of enlistees who failed A-school training was somewhat higher for the UPGRADE groups.
- Occupational Area: No discernable pattern of differences among the comparison groups could be detected for this variable.
- AFQT Scores: The average AFQT scores of UPGRADE subjects were only two or three points less than the averages for the other comparison groups. The UPGRADE enlistees had relatively less representation in Mental Group II category and more in Group III, particularly Group IIIL.
- Recruiting Area: No discernable pattern of differences was apparent among the comparison groups for the recruiting area variable. Noting that a recruiting area encompasses a very broad geographical area, this result was unsurprising.
- Term of Enlistment: The percent of enlistees with a term of enlistment of six years was much higher for the UPGRADE groups. However, in most

TABLE III-5  
Percent Distribution of Enlistees by Training Status

	<u>UPGRADE 81</u>	<u>UPGRADE 82</u>	<u>Early Dis- charge I</u>	<u>Early Dis- charge II</u>	<u>Non-Dis- charge 81</u>	<u>Non-Dis- charge 80</u>
A-School Grad	35.6%	31.1%	37.6%	36.4%	36.0%	29.8%
A-School Flunk	23.1	27.9	19.1	21.8	20.7	22.4
Inschool	0.3	0.4	1.3	1.6	6.1	9.5
PSI	0.1	0.0	0.1	0.2	0.1	0.1
Striker	7.7	8.0	8.2	7.6	7.7	7.6
General Detail	33.2	32.6	33.7	32.4	29.4	30.6
Total	100	100	100	100	100	100



TABLE III-6  
Percent Distribution of Enlistees by Occupational Area

	<u>UPGRADE 81</u>	<u>UPGRADE 82</u>	<u>Early Dis- charge I</u>	<u>Early Dis- charge II</u>	<u>Non-Dis- charge 81</u>	<u>Non-Dis- charge 80</u>
Non-Occupational	54.9%	50.9%	56.1%	54.0%	51.3%	51.3%
Seamanship	1.2	1.3	0.9	1.1	1.1	0.9
Electronic Repair	3.1	4.3	3.3	3.2	3.3	3.2
Communications	5.1	5.3	6.2	6.0	6.5	6.5
Medical	3.7	4.0	5.0	5.5	5.7	4.8
Allied	0.2	0.3	0.5	0.5	0.7	0.4
Administration	3.1	4.0	4.7	5.3	5.1	4.2
Mechanical Repair	16.9	19.7	14.8	15.8	19.0	21.5
Craftsmen	5.5	4.5	3.2	3.5	4.2	3.9
Service and Supplies	6.2	5.6	5.2	5.1	3.0	3.3
Total	100	100	100	100	100	100

TABLE III-7  
Percent Distribution of Enlistees By Mental Group

	UPGRADE 81	UPGRADE 82	Early Dis- charge I	Early Dis- charge II	Non-Dis- charge 81	Non-Dis- charge 80
Group I	2.0%	1.8%	2.3%	3.8%	3.0%	2.8%
Group II	25.0	28.0	29.5	33.1	30.0	29.0
Group III	53.2	51.8	50.7	46.8	46.3	47.9
- III U	25.8	26.4	26.7	24.1	22.4	23.6
- III L	27.4	25.4	24.0	22.7	23.9	24.3
Group IV	19.5	18.2	17.3	16.2	20.5	20.2
- IV A	11.2	10.5	10.8	9.8	11.7	11.7
- IV B	6.1	5.6	5.0	4.6	6.4	6.8
- IV C	2.2	2.1	1.5	1.8	2.4	1.7
Group V	0.2	0.2	0.1	0.1	0.1	0.1
Total	100	100	100	100	100	100

TABLE III-8

## Percent Distribution of Enlistees by Recruiting Area

	UPGRADE 81	UPGRADE 82	Early Dis- charge I	Early Dis- charge II	Non-Dis- charge 81	Non-Dis- charge 80
Area 1	22.5%	22.6%	21.4%	19.6%	21.6%	21.6%
Area 3	16.9	16.3	14.7	16.5	18.4	19.3
Area 4	21.1	19.8	21.5	22.8	22.0	21.0
Area 5	13.8	14.7	15.1	14.6	14.4	13.7
Area 7	13.1	13.4	13.7	14.0	12.6	12.4
Area 8	12.6	13.3	13.7	12.5	10.9	11.9
Total	100	100	100	100	100	100

Area 1: NY, CT, MA, NH, ME, RI, PA  
 3: GA, SC, FL, PR, TN, MS, AL, NC  
 4: OH, MI, IN, PA, VA, DC  
 5: IL, MO, WI, MN, NB, ND, IA, MO  
 7: NM, TX, CO, ARK, LA, OK  
 8: CA, OR, ID, UT, AR, HI, WA, AK, MT

TABLE III-9  
Percent Distribution of Enlistees By Term of Enlistment

<u>Term of Enlistment</u>	<u>UPGRADE 81</u>	<u>UPGRADE 82</u>	<u>Early Dis- charge I</u>	<u>Early Dis- charge II</u>	<u>Non-Dis- charge 81</u>	<u>Non-Dis- charge 80</u>
2 years	1.4%	0.9%	2.0%	1.5%	2.4%	3.4%
3 years	0.2	0.3	0.7	0.5	0.3	0.4
4 years	76.3	78.4	95.6	96.4	96.5	94.8
5 years	0.2	0.1	0.2	0.3	0.1	0.3
6 years	22.0	20.4	1.6	1.4	0.9	1.2
Total	100	100	100	100	100	100

instances the six year term is actually only a three year term with the option to renew for three more years, (e.g., the Ready Mariner Program).

The next section reports the analyses of several of the variables addressed in this section using the multivariate technique of discriminant analysis. The results of the next section reinforce the findings reported already in this section, but they also demonstrate the impacts of the variables relative to each other.

### C. Discriminant Analysis

The same variables reported singly in the previous section were analyzed simultaneously within a multivariate context. The results of the discriminant analysis presented in this section were very consistent with the previous section results. This consistency bolstered our confidence in the validity of the results.

Table III-10A presents standardized discriminant function coefficients while Table III-10B presents the definition of variables entered in the discriminant analysis.<sup>2</sup> The absolute values (i.e., numeric values irrespective of positive or negative signs) of the standardized coefficients represent the contribution of their respective variables. The contribution of the variable to distinguishing between UPGRADE and Early Discharge subjects is

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<sup>2</sup>The lay reader unfamiliar with multivariate techniques may wish to skip over the specific contents of Table III-10 and turn directly to the interpretive results discussed in the text. For the more technically minded reader, one reference on discriminant analysis is: Klecka, W.K., Discriminant Analysis, Sage University Paper Series on Quantitative Applications in the Social Sciences 07-019, (Beverly Hills, California: Sage Publications, 1980).

TABLE III-10A

## Discriminant Analysis of UPGRADE Versus Early Discharge (ED)

Standardized Discriminant Coefficients<sup>1/</sup>

Discriminating Variable <sup>2/</sup>	<u>UPGRADE 81 VS</u>		<u>UPGRADE 82 VS</u>	
	<u>ED-1</u>	<u>ED-2</u>	<u>ED-1</u>	<u>ED-2</u>
<u>Sea</u>	.67	.69	.65	.68
<u>Discipline</u>	.44	.38	.37	.30
UAINC ID	-.05	-.13	.31	.23
<u>Rating</u>	-.11	-.09	0.14	-.14
<u>AFQT</u>	.10	.19	.12	.20
Diploma	.08	.16	.06	.14
Sex	.16	.21	.26	.32
Dep	.12	.08	.11	.08
Age 1	.10	.08	.07	.04
Race	-.14	-.10	-.05	<u>-.3/</u>
Canonical Correlation	.45	.47	.49	.49
% Cases Correctly Classified	71%	72%	75%	75%

<sup>1/</sup> The absolute values of the standardized coefficients represent the relative contribution of their associated variables. The higher the absolute value, the greater the contribution.

<sup>2/</sup> See next table for definitions of variables.

<sup>3/</sup> Does not meet tolerance levels to be entered into the discriminant function.

TABLE III-10B

## Definition of Variables Entered in the Discriminant Analysis

<u>Sea</u> =	0 For sea duty 1 For shore duty
<u>Discipline</u>	0 For no disciplinary actions in end-of-quarter records, 1 For one or more disciplinary actions
<u>UAINCID</u> =	Number of UA incidences (greater than 24 hours)
<u>Rating</u> =	0 For no rating 1 For rating
<u>AFQT</u> =	Actual numerical AFQT score
<u>Diploma</u> =	0 For high school not completed or GED 1 For high school diploma
<u>Sex</u> =	0 For male 1 For female
<u>Dep</u> =	Number of dependents, including spouse
<u>Age 1</u> =	Age at time of entry into service
<u>Race</u> =	0 For Caucasian 1 For other

greater, the higher the absolute value of its coefficient.<sup>3</sup> The sea/shore duty status and disciplinary status variables, in particular, contributed the most to identifying the subject as UPGRADE or Early Discharge. More specifically, enlistees on sea duty and/or having disciplinary records clear of major infractions had a greater likelihood to be in the UPGRADE group rather than the Early Discharge group.

UPGRADE 81 and UPGRADE 82 were each compared against both Early Discharge I and II, resulting in four discriminant functions. An important overall result was that the discriminant function coefficients were very consistent across all four functions for each explanatory variable. The four coefficients for the sea/shore duty status variable (i.e., .67, .69, .65, and .68), for example, all have approximately the same value. This result substantiated our understanding of the direction and magnitude of the effect from a given variable. Also importantly, the very similar results for both Early Discharge I and II functions supported the conclusion that there was very little substitution effect between UPGRADE 81 and Early Discharge II which had occurred concurrently.

Besides the large impact of the sea/shore duty and disciplinary status variables, notable results of the discriminating variables included the following:

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<sup>3</sup>A positive sign in Table III-10A indicates that a higher positive value of the variable identifies the subject's group as Early Discharge. Alternatively, a lower value (e.g., negative relative to positive value) of the variable identifies the subject's group as UPGRADE. For example, the variable Sea has a value of 0 for sea duty status and 1 for shore duty. The positive sign of the variable Sea in Table III-10A indicates that the variable's value of 1 (shore) identifies the subject as an Early Discharge group member while the value of 0 (Sea) identifies the subject as an UPGRADE group member.



- Rating: Subjects who had an occupational rating, as opposed to no rating, tended to be classified by the discriminant function into the UPGRADE group. The relationship between rating and UPGRADE group membership appeared stronger in the multivariate context here than in the simple bivariate context of the previous section.
- UA Incidence: Number of UA incidents contributed to the classification of group memberships but its effect with regard to UPGRADE 81 was opposite from UPGRADE 82. That is, UA incidents tended to classify the subject as an UPGRADE 81 member in comparison to either ED-1 or ED-2. Conversely, the UA factor classified the subject as an ED member relative to UPGRADE 82. This reversal of effects was the only instance of occurrence in the discriminant function analysis of UPGRADE versus Early Discharge.
- AFQT Scores: Lower AFQT scores and lack of a high school diploma tended to identify the subject as an UPGRADE member rather than an Early Discharge member.
- Sex, Dependents, Age: Being female, having dependents, or being relatively older in age all tended to classify the subject as an Early Discharge member.

The discriminant analysis of UPGRADE versus Non-Discharge, as reported in Table III-11, rendered additional insights for the study by identifying and describing the UPGRADE group members as distinguished from the general first-term enlisted population. As in the analysis of UPGRADE versus Early Discharge, the sea/shore duty status variable had the most power in classifying subjects. By way of contrast, high school diploma status and UA incidents were much more significant factors in the discriminant analysis of UPGRADE versus Non-Discharge compared to UPGRADE versus Early Discharge. Clearly, having a high school diploma is a strong predictor of an enlistee's success in the Navy, while UA incidents jeopardizes the individual's potential for success. Other variables tended to be much less significant in the discriminant analysis and less consistent in their effects on classifying cases between UPGRADE and Non-Discharge groups.

The discriminant analysis of Early Discharge I versus Non-Discharge 81 (Table II-12) demonstrated further both differences and similarities between

TABLE III-11

## Discriminant Analysis of UPGRADE Versus Non-Discharge (ND)

Standardized Discriminant Coefficients<sup>1/</sup>

Discriminating Variable	UPGRADE 81 VS		UPGRADE 82 VS	
	ND-81	ND-80	ND-81	ND-80
<u>Sea</u>	.66	.67	.79	.79
Discipline	.08	.12	<u>2/</u>	.05
<u>UAINCID</u>	-.52	-.49	-.18	-.11
Rating	.03	.04	-.04	-.04
AFQT	<u>2/</u>	<u>2/</u>	.07	.07
<u>Diploma</u>	.43	.48	.47	.52
Sex	-.04	-.06	.05	.06
Dep	<u>2/</u>	<u>2/</u>	<u>2/</u>	<u>2/</u>
Age 1	.09	<u>2/</u>	.04	-.09
Race	-.12	-.10	-.05	<u>2/</u>
Canonical Correlation	.45	.40	.41	.36
% Cases Correctly Classified	71%	60%	67%	70%

<sup>1/</sup> The absolute values of the standardized coefficients represent the relative contribution of their associated variables. The higher the absolute value, the greater the contribution.

<sup>2/</sup> Does not meet minimum tolerance levels to be entered into the discriminant function.

TABLE III-12

Discriminant Analysis of Early Discharge I VS. Non-Discharge 81

Standardized Discriminant Coefficients<sup>1/</sup>

<u>Discriminating Variable</u>	<u>ED-1 Versus ND-81</u>
Sea	<u>-.2/</u>
<u>Discipline</u>	.64
<u>UAINCID</u>	.49
Rating	-.03
AFQT	.04
<u>Diploma</u>	-.33
<u>Sex</u>	.25
<u>Dep</u>	.25
Age 1	.04
Race	-.06
Canonical Correlation	.39
% Cases Correctly Classified	72%

<sup>1/</sup> The absolute values of the standardized coefficients represent the relative contribution of their associated variables. The higher the absolute value, the greater the contribution.

<sup>2/</sup> Does not meet minimum tolerance levels to be entered into the discriminant function.

UPGRADE and Non-Discharge subjects. The sea/shore duty status variable was insignificant in this discriminant function, but disciplinary status, UA incidents, sex, and number of dependents all played important roles:

- Disciplinary Status and UA Incidents: The Early Discharge subject presented much more of a problem than the Non-Discharge member in terms of both severe disciplinary infractions and UA incidences.
- High School Completion: As in the case of the UPGRADE member, lack of the high school diploma characterized Early Discharge members.
- Sex and Dependents: In contrast to the Non-Discharge group (and UPGRADE group as well), the Early Discharge group had greater proportions of females and members with dependents.

The next section, Analysis of Microfiche Record Data, reports the investigation of pertinent factors not available in the STF or EMR computerized data files. The analysis in the next section substantiated and complemented the analysis of this section.

#### D. Analysis of Microfiche Record Data

The objective of the microfiche records analysis was to provide analysis of relevant variables not available from the computerized data files (STF/EMR). These variables included:

- Performance evaluation marks
- Drug-related incidences
- Non-judicial punishments
- UAs less than 24 hours
- Marital status of parents (a proxy used for this variable was whether enlistees' parents had the same address).

These variables permitted the research to focus more on the marginal performance aspects of the enlistee's record, as opposed to severe disciplinary

problems or the sociodemographic background of the enlistee. The analysis of these variables provided a more direct test of the overall conclusions arrived at in the previous sections.

Table III-13 reports the sizes of the microfiche record samples for the UPGRADE 81, UPGRADE 82, and Early Discharge II groups. Both UPGRADE 81 and UPGRADE 82 were sampled in order to determine any difference in drug-related incidents between the two groups. UPGRADE 82 happened to coincide with a CNO initiative against illegal drug use in the Navy. The analysis here was intended to determine if the UPGRADE 82 group experienced a higher rate of drug-related incidents relative to the UPGRADE 81 group. A higher incidence rate for the UPGRADE 82 group would indicate that the drug initiative had a substitution effect on UPGRADE. That is, members who should have been identified and subjected to action under the drug initiative were instead identified, but processed out under the simpler UPGRADE procedures.

Initial attempts were made to sample Non-Discharge and Early Discharge I groups, but difficulties were encountered in obtaining adequate sample sizes with complete records. The performance evaluation records of Non-Discharge members, in particular, underwent deletions and changes as the members moved up in pay grade. Furthermore, samples of the Non-Discharge groups would have represented "samples of samples", thereby reducing the validity of any results pertaining to these groups.

Samples sizes were chosen to achieve 5 percent significance levels in making statistical inferences on the respective population groups (assuming, conservatively, relatively large variance in the parameters of interest to this study). The basic objective was to draw random samples which represented

TABLE III-13

Microfiche Record Sample Sizes of Study Groups

<u>GROUP</u>	<u>SAMPLE SIZE</u>
UPGRADE 81	323
UPGRADE 82	355
EARLY DISCHARGE II	372

the population in terms of several multi-dimensional aspects, such as sea duty status, paygrade, high school diploma status, sex, and race. Tables III-14 and III-15 demonstrate close correspondence between the samples and population groups.

The results of the microfiche record analysis are reported in Tables III-16 to III-18. The major results were:

- Overall: Results strongly support the overall conclusion from earlier analysis of STF/EMR data that UPGRADE subjects were marginal performers on the whole while Early Discharge cases represent more severe disciplinary problems.
- Performance Evaluation Marks: Performance evaluation marks were significantly higher for Early Discharge relative to UPGRADE cases. In particular, the percent of the Early Discharge sample with a grade average of 3.0 or greater was much higher relative to the UPGRADE sample.
- UA Incidence and NJPs: UAs (less than 24 hours each) and non-judicial punishments (which included reprimand for UAs) tended to run higher in the UPGRADE sample relative to the Early Discharge sample.
- Drug-Related Incidence: Incidence of illegal possession of drugs was notably higher for UPGRADE 82 relative to UPGRADE 81. UPGRADE 82 coincided with the CNO's major drug initiative in 1982. Also, the drug-related incidence rate was higher for UPGRADE overall relative to Early Discharge.
- Marital Status: Marital status of parents (proxied by parental address) appeared to have little, if any, relationship to UPGRADE versus Early Discharge group membership.
- Sea/Shore Duty Status: Variables available from the microfiche data file contributed significantly in discriminant analysis of UPGRADE versus Early Discharge cases. Sea/shore duty status, analyzed previously in the STF/EMR data file, remained the most important variable in terms of distinguishing UPGRADE from Early Discharge cases when the other microfiche-based variables were added to the analysis.

The variables involved in the analysis of the microfiche record data provided a more direct and closer look at the performance and behavior of UPGRADE and Early Discharge individuals. The results clearly point out that the work

TABLE III-14

## Verification of Sample File Representativeness

## Against Population Groups:

## Comparison of Percent Distributions of Variables

	UPGRADE 81		UPGRADE 82		EARLY DISCHARGE 11	
	POPULATION	SAMPLE	POPULATION	SAMPLE	POPULATION	SAMPLE
Sea Duty						
- Sea	78.8%	79.4%	80.2%	81.6%	37.4%	44.6%
- Shore	21.2	20.6	19.8	18.4	62.6	55.4
Paygrade						
- E-1	32.2	26.9	25.2	28.7	30.7	27.2
- E-2	39.6	47.1	40.1	39.2	34.4	39.8
- E-2 (or higher)	28.3	26.0	34.7	32.1	35.0	33.1
High School Diploma						
- No Diploma	35.6	39.0	31.7	30.7	23.7	23.9
- GED	12.7	12.4	14.2	15.5	14.1	14.5
- HS Diploma	51.7	48.6	54.1	53.8	62.3	61.6
Sex						
- Male	95.6	93.5	97.0	96.9	81.9	82.3
- Female	4.4	6.5	3.0	3.1	18.1	17.7
Race						
- White	78.7	78.9	80.5	78.3	83.5	81.7
- Other	21.3	21.1	19.5	21.7	16.5	18.3
Marital						
- Not Married	85.5	85.4	85.7	86.8	78.9	79.8
- Married	14.5	14.6	14.3	13.2	21.1	20.2



TABLE III-15

## Verification of Sample File Representativeness

## Against Population Groups:

## Comparison of Mean Values of Variables

	UPGRADE 81		UPGRADE 82		EARLY DISCHARGE II	
	POPULATION	SAMPLE	POPULATION	SAMPLE	POPULATION	SAMPLE
TIME REMAINING ON CONTRACT (MONTHS)	21.9	20.9	23.0	22.4	26.7	26.5
AGE (YEARS)	21.2	21.2	21.2	21.1	21.6	21.6
UAs (24 + HRS) PER MEMBER	1.32	1.42	0.59	0.55	1.02	1.17
DISCIPLINARY ACTION PER MEMBER	.089	.107	.079	.084	.705	.845
AFQT SCORE	56.6	56.5	56.5	57.4	60.0	59.6
NO. OF DEPENDENTS PER MEMBER	.266	.251	.252	.256	.692	.699

TABLE III-16

Percent Distribution of Enlistees by  
Selected Variables Based on Microfiche Data

	<u>UPGRADE 81</u>	<u>UPGRADE 82</u>	<u>EARLY DISCHARGE II</u>
PERFORMANCE GRADE			
AVERAGE	59.3%	59.4%	35.4%
- BELOW 3.0	40.5	40.5	64.4
- 3.0 OR HIGHER			
UAS LESS THAN			
24 HRS.			
- NONE	51.6	63.9	72.3
- ONE OR MORE	46.4	36.1	27.7
NON-JUDICIAL			
PUNISHMENT 1/			
- NONE	5.9	8.7	32.4
- ONE	17.3	18.6	18.9
- TWO	22.9	27.9	16.2
- THREE OR MORE	53.9	44.8	32.4
DRUG INCIDENCE			
- NO POSSESSION OF			
DRUGS	63.2	55.6	71.4
- ONE OR MORE TIMES			
OF ILLEGAL			
POSSESSION OF DRUGS	36.8	44.4	28.6
PARENTAL STATUS 2/			
- SAME ADDRESS	72.0	68.0	70.7
- DIFFERENT ADDRESSES	28.0	32.0	29.3

1/ Includes UAS Less Than And Greater Than 24 Hours.

2/ Proxy For Marital Status of Enlistee's Parents.

TABLE III-17

## Mean Values of Selected Variables

Based on Microfiche Data

	<u>UPGRADE 81</u>	<u>UPGRADE 82</u>	<u>EARLY DISCHARGE II</u>
PERFORMANCE GRADE AVERAGE	2.78	2.84	2.99
UAs LESS THAN 24 HRS.	1.23	.86	.60
NO. OF NJP'S PER MEMBER	2.25	2.09	1.49

TABLE III-18  
Discriminant Analysis of Upgrade  
Versus Early Discharge (ED)  
Based on Microfiche Data

<u>DISCRIMINATING VARIABLE</u>	<u>UPGRADE 81 VS ED 11</u>
SEA	.48
NJP	-.41
DISCIPLINE	.39
GPA	.31
DEGREE	.25
AFQT	.16
PARENT	.14
SEX	-.15
UA	-.14
DRUG	-
RACE	-
% CASES CORRECTLY CLASSIFIED <u>1/</u>	69%

1/ The Percent of Cases Correctly Classified Provides a Measure of the Overall "Power" of the Discriminant Function to Correctly Classify a Subject as Being Either Upgrade or Early Discharge.

performance of UPGRADE individuals was relatively poor and their discipline behavior was "marginal" as well. In addition, the rate of drug-related incidents was high for both UPGRADE groups and even higher for UPGRADE 82 which coincided with the 1982 CNO drug initiative.

#### IV. CONCLUDING REMARKS

At the outset of the study it was not clear whether UPGRADE had been, in effect, a substitute for or alternate to the regular Early Discharge program. Intuitively, one could expect reasonably that UPGRADE would have discharged many individuals who would have been discharged otherwise through the regular Early Discharge program. By far, the largest proportion of Early Dischargees fall into the broad categories of "unsuitable" and "burden to command," as opposed to such categories as "enlistment error" or "disabled." Since UPGRADE was targeted at the marginal performer, many of the UPGRADE dischargees would have been expected to fall into a category comparable to "unsuitable" or "burden to command" as well.

Indeed, UPGRADE dischargees, on the whole, had poor performance and behavior records, as reflected by:

- Low performance evaluation marks.
- High incidence rate of NJPs.
- High rate of UAs, particularly UAs of less than 24 hours in duration.
- High number of NJPs.

Yet, the results clearly point to the conclusion that UPGRADE was not a "substitute" program. For one, the overall early discharge rate for first-term enlistees rose dramatically during the two two-month periods in which UPGRADE 81 and 82 were in effect. Further, several enlistee characteristics and Navy-related factors were shown to effectively distinguish between UPGRADE dischargees and Early Dischargees. Both the qualities of the individual enlistee and institutional factors set the UPGRADE dischargee apart from the Early Dischargee.

With regard to the individual qualities, the average work performance of the UPGRADE discharger was worse than Early Dischargees, based on performance evaluation marks. Conversely, discipline and behavior were more serious problems with Early Dischargees. The latter group had a higher incidence rate of major infractions, while the UPGRADE group had a higher rate of minor offenses (i.e., NJPs). The incidence rate for UAs of greater than 24 hours were, on the whole, comparable between UPGRADE and Early Discharge, but the UPGRADE groups actually had higher rates for UAs of less than 24 hours.

These results tend to describe the UPGRADE individual as a truly "marginal" case in terms of behavior. In contrast, work performance of UPGRADE dischargers, on average, appeared to be worse than marginal, at least in comparison to Early Dischargees. A unique feature of UPGRADE as it was actually implemented, was the relatively heavier emphasis on work performance per se as a criterion for early discharge.

By far, the most statistically significant institutional factor for distinguishing UPGRADE subjects from Early Dischargees was sea versus shore duty status. The major operational difference between UPGRADE and the regular Early Discharge program is the reduced administrative burden for processing discharges with UPGRADE. This apparently had a relatively large impact in decisions by sea commands to execute UPGRADE discharges, since those sea commands normally are not as well equipped as shore commands to perform the administrative workload associated with early discharges. If this is the situation, it could indicate that either the administrative workload of the normal early discharge program should be reduced, or that the administrative staffs of ships needs to be incremented or better trained to handle the early discharges.

A broader implication of the UPGRADE effort relates to the issue of effectively screening applicants before they enter the Navy. Lack of the regular high school diploma related significantly to separating both UPGRADE and Early Discharge subjects from Non-Dischargees. In other words, high school diploma status is a good predictor of success in the Navy. Furthermore, this variable was a better predictor for identifying a subject as an UPGRADE dischargee vs Non-Dischargee relative to Early Dischargee vs Non-Dischargee. Strengthening the recruit screening criteria with respect to having a high school diploma (rather than a GED) could by itself "UPGRADE" the Navy.

The study result of high UA rates for UPGRADE subjects suggests another potentially useful criterion for screening Navy applicants. That criterion would be a comparable measure of unauthorized absences while the applicant was in high school, as obtained from his/her attendance record. Obtaining the appropriate information through high schools, though, would require that the applicant sign an appropriate release form.



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